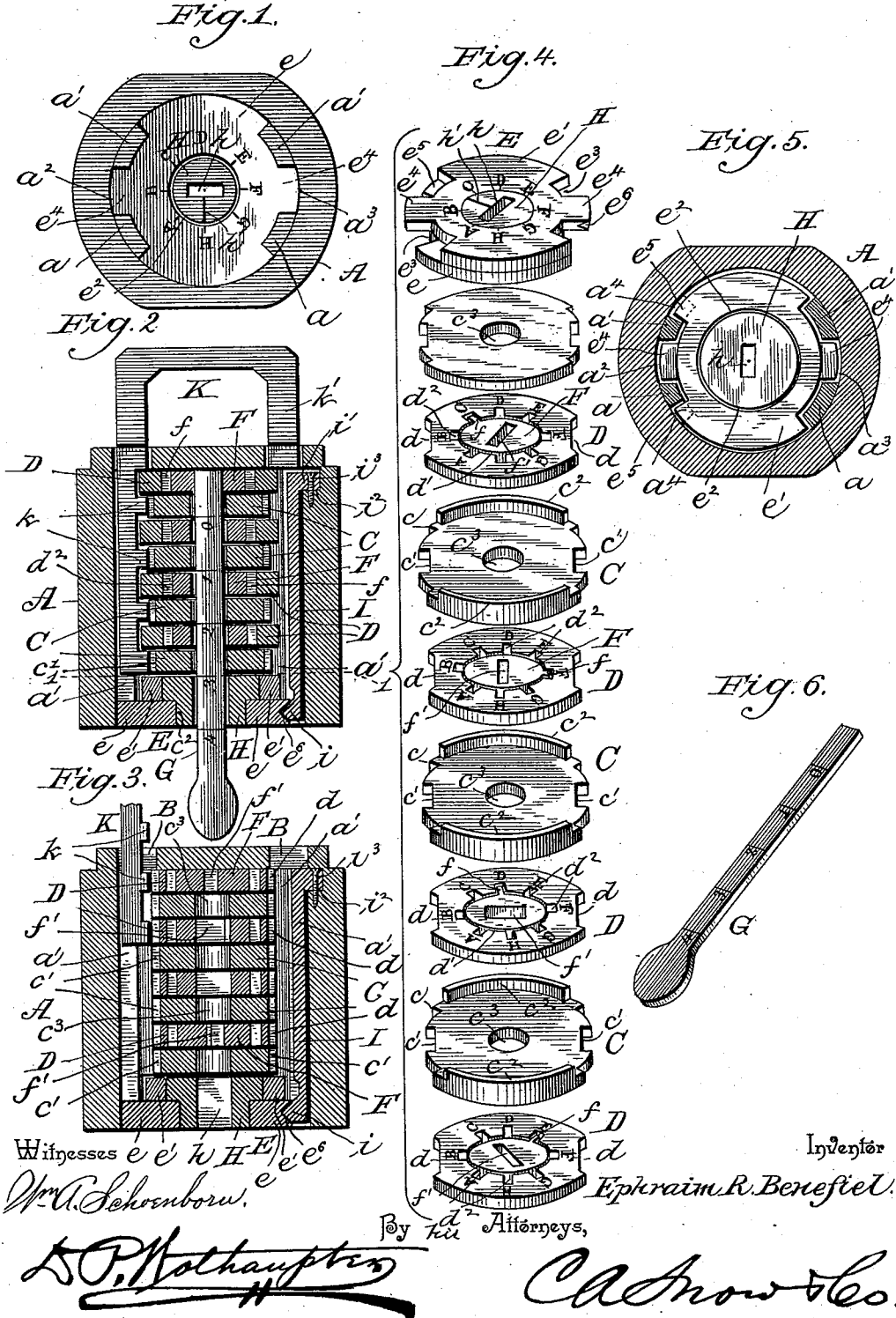


(Model.)

E. R. BENEFIEL.
PERMUTATION PADLOCK.

No. 465,315.

Patented Dec. 15, 1891.



UNITED STATES PATENT OFFICE.

EPHRAIM R. BENEFIEL, OF STAFFORD, KANSAS.

PERMUTATION-PADLOCK.

SPECIFICATION forming part of Letters Patent No. 465,315, dated December 15, 1891.

Application filed June 26, 1891. Serial No. 397,642. (Model.)

To all whom it may concern:

Be it known that I, EPHRAIM R. BENEFIEL, a citizen of the United States, residing at Stafford, in the county of Stafford and State of Kansas, have invented a new and useful Permutation-Padlock, of which the following is a specification.

My invention relates to improvements in permutation-padlocks; and it has for its object a simple and cheaply-constructed lock that will be easily operated, and yet at the same time allows for a variety of combinations and forms a secure lock that will be impossible to be opened unless the combination is known; and it consists of an alternate series of stationary disks and revolving tumblers, each tumbler operated independently of each other and combined in a novel arrangement and combination of parts hereinafter more fully described, illustrated in the accompanying drawings, and specifically pointed out in the appended claims.

In the accompanying drawings, Figure 1 is a bottom plan view of a permutation-padlock constructed in accordance with my invention. Fig. 2 is a vertical sectional view, the hasp being locked within the same and the key inserted within the lock preparatory to opening. Fig. 3 is a similar view with all the tumblers having their notches in alignment, illustrating the padlock in its unlocked position. Fig. 4 is a detail in perspective showing the parts of the lock one above the other. Fig. 5 is a transverse sectional view on the line 1 1 of Fig. 2. Fig. 6 is a detail in perspective of the key.

Referring to the accompanying drawings by letter, A designates the barrel or casing within which the several parts of the lock are placed. On opposite sides of the interior of said barrel or casing are the two pairs of strips a and a' , which form the guides a^2 and a^3 , respectively, which register with the openings B, located in the top of said barrel. Within said barrel or casing is placed a series of stationary disks C, between which are alternately placed revolving disks D, which are adapted to work between said stationary disks and operate the lock. Each stationary disk C is provided on opposite sides with the shoulders c , which are adapted to abut against the said opposite pair of guide-strips within the cas-

ing and hold said stationary disks firmly in place. The said disks are further provided between said shoulders with squared recesses c' , that are adapted to register with the guides a^2 and a^3 to form a continuous way, said disks also being provided with segmental flanges c^2 and central perforations c^3 .

The revolving disks or tumblers D are adapted to be seated alternately between and within the segmental flanges of the stationary disks, and are also provided with the opposite squared recesses d , corresponding to the squared notches or recesses in the stationary disks and registering with the way between the opposite strips within the casing. Disks or tumblers D are provided with a large central perforation d' , the periphery of which is broken by a series of notches d^2 , each of which indicates a letter or number of the combination and corresponds in position to that upon the outside face of the bottom dial-plate E. Within the perforation d' of each tumbler or disk is placed a circular block or disk F, snugly fitting within said perforation and provided with a tongue f , that is designed to engage any one of the series of lettered or numbered notches d^2 , according to the letter or number of the combination at which it is designed for said disk to be in the position for withdrawing the hasp. A slotted perforation f' , centrally located within said blocks or disks F, is adapted to be engaged by the key G, which operates each tumbler.

Any number of stationary and revolving disks may be used as desired and according to the complexity of combinations required, and as said disks are placed alternately within the barrel or casing, first the stationary disks with the side flanges, then the revolving disks working within said flanges, and an alternate repetition of this arrangement, the whole being held securely within the barrel or casing by means of the bottom dial-cap E, previously referred to. The cap E is composed of two plates e and e' , the outer of which is provided with a series of letters or numbers corresponding exactly with those upon the notched tumblers or disks within the casing, and is also provided with a central perforation e^2 , extending through the entire thickness of said cap, the perforation in the inner plate e' being of larger diameter than that of the

outer plate, in order that the revolving flanged plate H may be seated within said perforation and be prevented from falling from the same when the lock is inverted, the said revolving plate being provided with a slotted perforation *h*, corresponding to that within the disks which operate the revolving tumblers, said revolving plate being also provided with an indicating-point *h'*, that indicates the alignment of the various tumblers within the casing when the same points to the letters or numbers corresponding to those of the said tumblers.

The plate E is provided with the opposite squared recesses *e*³, that take over the opposite pairs of strips within the barrel or casing, and also with the tongues *e*⁴, that take into the guide or way between the said strips and firmly hold the said bottom plate rigidly, while the projecting ends *e*⁵ on one side of the inner plate *e'*, engaging the notches *a*⁴, located at the ends of one pair of strips, securely lock one side of said bottom dial-plate.

Within the guide or way between the strips opposite to the notched strips a key I is designed to be placed. The lower end of said key is provided with an inwardly-projecting tongue *i*, that is adapted to engage the notch *e*⁶, with which one of the tongues *e*⁴ on the bottom plate E is provided, while the other end of said key is provided with the shouldered projection *i'*, that is adapted to seat itself upon the shoulder *i*³, located near the top of the said barrel or casing, and is secured thereto by means of the screw *i*³, thus firmly locking the bottom plate within the bottom of the barrel or casing, and thus holding the several parts of the lock together. Within the opposite way to which the key is placed the ordinary notched shank *k* of the hasp K works, while the short shank *k'* of the same is designed to seat itself within the perforation located in the top of the barrel or casing directly over the shoulder *i*³, just referred to.

The key G, previously referred to, is provided with a series of marks, according to the number of revolving tumblers within the casing, which marks are spaced according to the distance between said tumblers, and when it is designed to operate the lock the flat key is inserted within the slotted revolving disk located within the bottom plate, and is turned and revolved back and forth until the same has passed through the slots in each of the circular blocks within each tumbler. It is now turned until the indicating-mark upon the revolving plate within the bottom cap of the lock points to the number or letter at which the first tumbler is set to place its opposite notches or recesses in alignment with the guide or way in which the notched shank of the hasp works. The key is now withdrawn one space and is turned to the number or letter at which the next revolving tumbler is placed in its unlocked position, and so on until each tumbler has been unlocked and each part of the combination operated, at which

time the hasp of the lock can be easily and readily withdrawn.

The operation of this lock is now thought to be apparent from the foregoing description.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a permutation-padlock, the barrel or casing, an alternate series of stationary disks, intermediate revolving tumblers provided with opposite squared recesses or notches and central perforations, each revolving tumbler being further provided with means for setting at various combinations, a dial plate and cap secured within the bottom of said barrel or casing, and a supplemental key passing through said perforations and said dial plate and cap and operating simultaneously the indicator of said dial-plate and said revolving tumblers, substantially as set forth.

2. In a permutation-padlock, a barrel or casing provided with an opposite pair of strips forming guides or ways, a series of stationary disks provided with shoulders and squared recesses, a series of intermediate revolving tumblers alternately interposed between and upon said stationary disks and partially inclosed thereby and provided with a series of marked notches and opposite recesses, a circular block located within said revolving tumblers and provided with a slotted perforation and a tongue engaging the notches in the said tumblers, the stationary bottom dial-plate, a key locking said dial-plate, and a supplemental key passing through the dial-plate and lock and operating said tumblers, substantially as set forth.

3. In a permutation-padlock, a series of stationary disks provided with opposite squared recesses and shoulders and opposite segmental flanges, a series of revolving tumblers alternately interposed between said stationary disks and inclosed within said flanges, the same being provided with opposite squared recesses and a central perforation, the periphery of which is broken by a series of marked notches, a circular block located within said recesses and provided with a slotted perforation and a tongue engaging said notches, and a supplemental key passing through said disks and tumblers and operating said tumblers, substantially as set forth.

4. In a permutation-padlock, a barrel or casing provided with an opposite pair of strips forming guides or ways, the shackle having a notched shank, an alternate series of stationary disks and revolving tumblers, a bottom dial-plate provided with opposite squared recesses and tongues engaging said strips and the guides or ways, a locking-key provided with opposite tongues or shoulders engaging said dial-plate, a shoulder located at the top extremity of one of said guides or ways in the barrel or casing, and a key for operating said tumblers, substantially as set forth.

5. In a permutation-padlock, a barrel or casing provided with an opposite pair of strips

forming guides or ways, the shackle having a notched shank, an alternate series of stationary disks and revolving tumblers provided with opposite squared recesses or notches and central perforations, each revolving tumbler being further provided with means for setting at various combinations, a bottom dial-plate provided with opposite squared recesses and tongues engaging said strips and the guides or ways, notches located in one pair of strips, a circular block or plate working within said dial plate or cap, a locking-key provided with opposite tongues or

shoulders engaging the notched tongue of said bottom cap, a shoulder located at the top extremity of one of said guides or ways, and a key for operating said tumblers, substantially as set forth. 15

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses. 20

EPHRAIM R. BENEFIEL.

Witnesses:

J. E. WILEY,

E. S. HADLOCK.